

# Recovery Plan Action Status

Plan Name: Apalachicola Rosemary

Plan Status: Final

Plan Date: 27-Sep-94

Lead Agency: USFWS

Lead Office: Panama City Ecological Services Field Office

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Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Apalachicola rosemary (Conradina glabra)	1	1	Encourage conservation of existing populations on private lands	Ongoing Current	Prior to FY 1995		Landowners , Manager	Management, Management: Habitat Maintenance and Manipulation	Species Expert	TNC is managing population on their land. TNC is also participating in an informal working group that with the Service, makes recommendations to FDEP who has approx. 95% of all historic and current occurrences on their land.
Apalachicola rosemary (Conradina glabra)	1	2	Annual population monitoring and mapping	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, The Nature Conservancy, Florida Department of Environmental Protection, Division of Recreation and Parks	Research: Population Surveys	Internal Field Assistance	FDEP is conducting surveys of their land to map all occurrences of the plant. They are also conducting monitoring of the plant's response to their habitat restoration activities. This is an ongoing action conducted by FNAI and Florida Park Service staff and volunteers in recent years. Currently, 60 - 70 % of the Sweetwater Creek Track (SCT) containing C. glabra has been mapped (Spector, 2009, pers. comm.).

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Apalachicola rosemary (Conradina glabra)	1	3	Management of rights-of-way	Partially Complete	FY 2006		U.S. Fish and Wildlife Service, Florida Department of Transportation, Utilities, County Road Department	Management: Land Use	Labor type not yet selected	Florida Gas Transmssion company as apart of a Section 7 consultation for management and maintainance of their ROW have transplanted plants that would be otherwise destroyed by maintenace activties, to FDEP land to aid in recovery efforts. FGT has also agreed to protect the plant during ROW maintainance activities. This recovery action is ongoing and conducted primarily by the Florida Department of Transportation (FDOT) and Florida Gas and Transmission (FGT). Spot application of moderately toxic herbicide Garlon 4 is used to treat exotic shrubs or trees at Torreya State Park (TSP).
Apalachicola rosemary (Conradina glabra)	1	4	Habitat acquisition	Partially Complete	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, The Nature Conservancy, Florida Department of Agriculture and Consumer Services, including Forestry Division	Acquisition: Fee Title	Labor type not yet selected	In 2001 FDEP acquired 7,040 acres of the "Sweetwater Tract. The purchase encomapsses the majority (90-95%) of the plants known and hisoric range. Actual costs of acquiring land by purchase or protecting it through conservation easements is not included here

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Apalachicola rosemary (Conradina glabra)	1	5	Population biology - fire management	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, The Nature Conservancy, Florida Department of Environmental Protection, Division of Recreation and Parks	Research: Management Techniques	Labor type not yet selected	Both TNC and FDEP are monitoring the plants response to their prescribed burning programs. More monitoring and research is needed as FDEP begins to introduce fire on their land on more of a landscape scale that will impact larger segments of populations of c. glabra. This is an ongoing action initiated in 2005 and conducted by the Florida Park Service. The response in ground and canopy cover, and overall C. glabra density and individuals under 5mm height are being monitored for five years following four treatments: 1) mechanical sand pine removal with windrow intact, burn and native plants not planted, 2) mechanical sand pine removal and flatten windrows, burn and native plants not planted, 3) mechanical sand pine removal, native groundcover planted and burn in flattened windrows, and 4) control/no harvest (Spector, 2009, pers. comm.).

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Apalachicola rosemary (Conradina glabra)	2	6	Population biology - life history studies	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, The Nature Conservancy, Universities	Management: Planning, Research: Population Assessment	Species Expert	<p>Fl. Dept. of Agricultural &amp; Consumer Services, Division of Forestry completed a pollination study, documenting pollination between 3 different populations on TNC land is taking place.</p> <p>Currently (2009): Ms. Amanda Kubes, a Florida State University graduate student, is examining the effectiveness of pollinators on seed set, information that she plans to use in projecting species distribution models of potential range shifts under future climate change (Note: how effectiveness will be used in projecting distribution need clarification).</p> <p>Mr. J. Bladow and Dr. Winn (Florida State University) censused in 2009 and 2010 three introduced populations and three natural populations to construct stage-structured demographic models to project the current growth rates of the introduced populations and to compare them to natural populations. Sensitivity and elasticity analyses were performed to determine the importance of individual rates of</p>

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										<p>growth, survival, and seed production to the overall success of each population. All of the populations examined were projected to grow or remain stable indicating that the introduced and natural populations are projected to be successful. As a whole, introduced populations grew faster than natural populations. Stasis of large plants, or the proportion of large plants that survived and remained in the same stage class from one year to the next, was the most important vital rate in maintaining the population growth rate for both introduced and natural populations. At present, all populations are projected to remain stable or grow, although the timeframe over which data were collected was short relative to the lifetime of individuals, and the predicted success of populations is conditional upon the assumption that estimates of the vital rates accurately reflect long-term rates of growth, survival, and reproduction. Inbreeding depression can occur in these populations and is a threat that should be considered when introducing</p>

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										populations, even though at this time, <i>C. glabra</i> populations are growing despite the potential for inbreeding depression.
Apalachicola rosemary ( <i>Conradina glabra</i> )	3	7	<i>Conradina glabra</i> surveys outside its current range	Not Started			U.S. Fish and Wildlife Service	Work type not yet selected	Labor type not yet selected	

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Apalachicola rosemary (Conradina glabra)	3	8	Genetic studies	Complete	Prior to FY 1995	Prior to FY 1995	U.S. Fish and Wildlife Service, Universities	Work type not yet selected	Labor type not yet selected	Martin (1992) used starch gel electrophoresis to describe allozyme diversity and genetic structure in this endangered species and its nearest relative, <i>C. canescens</i> . The author sampled two disjunct populations: one population containing three subpopulations of <i>C. glabra</i> in Liberty County and two <i>C. canescens</i> populations located in Santa Rosa County. The results revealed that each of the two disjunct populations was in Hardy-Weinberg equilibrium and had high levels of genetic diversity typical of an outcrossing breeding system (see section II.3 recovery action 2.2). The allozyme study showed that the <i>C. glabra</i> populations are genetically divergent from the populations of <i>C. canescens</i> . A recent study employing microsatellite data indicated that the species boundaries are not questionable (Edwards 2008a).

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Apalachicola rosemary (Conradina glabra)	3	9	Garden propagation and reintroduction	Partially Complete	FY 2006		Botanical Gardens, U.S. Fish and Wildlife Service, Center for Plant Conservation	Work type not yet selected	Labor type not yet selected	<p>Florida Gas Transmission Co. has transplanted plants from their ROW that would have otherwise been destroyed during their maintenance activities to FDEP lands to aid in recovery efforts.</p> <p>At present, the Bok Sanctuary has three beds of this species along with two that contain sparse plantings totaling 93 plants. These plants are clones of the same source population made in November of 1987 and 1988 (Campbell, 2009, pers. comm.). Neither the Bok Sanctuary nor the National Center for Genetic Resources Preservation in Fort Collins, Co. possesses stored seeds.</p> <p>Translocation Conradina glabra was reintroduced within its original range onto The Nature Conservancy's ABRP in 1991. Forty-eight plots of nine rooted cuttings were planted in each of three xeric sandhill sites at the preserve. Survival of planted cuttings was 94%. Prescribed fire management applied to two of the sites killed 25 % of those plants. Seedling establishment was highest in the burned sites. In</p>



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										general, survival rate was high 1 or 2 years after transplantation, however, long-term results of these transplants are lacking (D. Printis, TNC, 2009, pers. comm.). Longer term monitoring is necessary, because although initial transplant survival rates may be high the results of translocation are often followed by significant reversals over time.